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09/661,279	09/14/2000	Larry Bert Brenner	AUS9-2000-0268-US1	8826

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EXAMINER	
OPIE, GEORGE L	
ART UNIT	**PAPER NUMBER**
2126	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/661,279	Applicant(s) Brenner et al.
	Examiner George L. Opie	Art Unit 2151

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

1) X Responsive to communication(s) filed on 29 March 2004 .

2a) X This action is **FINAL**. 2b) ___ This action is non-final.

3) ___ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) X Claim(s) 1-50 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ___ Claim(s) _____ is/are allowed.

6) X Claim(s) 1-17, 24-40 and 47-50 is/are rejected.

7) X Claim(s) 18-23 and 41-46 is/are objected to.

8) ___ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ___ The specification is objected to by the Examiner.

10) ___ The drawing(s) filed on _____ is/are objected to by the Examiner.

11) ___ The proposed drawing correction filed on _____ is: a) ___ approved b) ___ disapproved.

12) ___ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13)_ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a) ___ All b) ___ Some * c) ___ None of the CERTIFIED copies of the priority documents have been:

1. ___ received.
2. ___ received in Application No. (Series Code / Serial Number) _____.
3. ___ received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14) ___ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Attachment(s)

14) X Notice of References Cited (PTO-892)
15) ___ Notice of Draftsperson's Patent Drawing Review (PTO-948)
16) ___ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
17) ___ Interview Summary (PTO-413) Paper No(s). _____.
18) ___ Notice of Informal Patent Application (PTO-152)
19) X Other: Text Doc for USP5,528,513

DETAILED ACTION

This Office Action is responsive to Amendment A, in which claims 1-2, 24-25 and 48 were amended.

The Office acknowledges Applicant's inclusion of an electronic copy of the amendment on a 3½inch floppy disk, and the Office would like to thank Applicant for submitting the amendment in electronic form to expedite its processing.

1. REQUESTING PRIOR ART REFERRED TO BY APPLICANT BUT NOT SUBMITTED

2. Applicant has made reference to prior art in the Application on p20 ln28 -- p21 ln28 of the specification. Specifically, Applicant has referred to the "NICE" mechanism that UNIX systems have made available to manage process priorities. Copies of documents in connection with the foregoing are requested so that they can be fully considered.

Applicant is required to respond to this request, failure to do so could result in a NON-RESPONSIVE Office action.

3. **Obviousness-type double patenting rejection**
The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See In re Goodman, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. CIT. 1993); In re Longi, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); In re van Ornurn, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); In re Uogel, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and In re Thorington,418 F.2d 528, 163 USPQ 644 (CCPA 1969).

Terminal Disclaimer

4. A timely filed terminal disclaimer in compliance with 37 C.F.R. ' 1.321(b) would overcome an actual or provisional rejection on this ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 C.F.R. ' 1.78(d).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claim 1 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 3 of application 08/862,044 filed May 22, 1997, now U.S. Patent 6,263,359.

Although the conflicting claims are not identical, they are not patentably distinct from each other because of corresponding language that recites many of the same elements and functions claimed in the previously patented invention, albeit using different nomenclature, i.e., *"a method of workload management" or method of scheduling jobs, "classifying a process into a plurality of predefined classes" or organizing the jobs into a hierarchy comprising groups of job classes, "classes having corresponding system resource shares and tiers" or job class having a set of subclasses associated therewith, and "performing workload management ... based on the system resource shares of the class" or proproportionally allocating the resources to subclasses within a particular job class with the given group.*

The claimed differences would be obvious to an engineer of ordinary skill because the instant claims are mere variations of the claims recited in the previously patented invention, e.g., **independent claim 1 of the instant application claims**:

A method of workload management in a data processing system, comprising:

classifying a process into a class of a plurality of predefined classes, each of the plurality of predefined classes having corresponding system resource shares and tiers a tier;

performing workload management with respect to classes in other tiers based on priorities of the tiers; and

performing workload management with respect to other classes within a same tier as the class into which the process is classified, based on the corresponding system resource shares of the class and of the other classes, such that at least some of the processes within a same tier concurrently share system resources during execution of the at least some processes.

as opposed to
A method of scheduling jobs to be executed by a resource in a computer system, comprising the steps of:
organizing the jobs into a hierarchy comprising groups of job classes, wherein at least one group of job classes includes at least one job class having a set of subclasses associated therewith;
proportionally allocating the resource to the hierarchy according to a usage objective;
proportionally allocating the resource to the hierarchy according to a response objective; and scheduling job classes for execution to satisfy an objective selected from the group of objectives consisting of the usage objective, the response time objective and a combination of the usage and response time objectives,
wherein the response objective
proportionally allocates the resource to subclasses within a particular job class of the job classes with the given group

as claimed in dependent claim 3 of the previously patented invention.

Because the instant claims are mere variations/additions on the limitations from the set of elements and functions claimed in the previously patented invention, such modifications would be readily apparent to an engineer of ordinary skill.

6. Allowable Subjectmatter

7. Claims 18-23 and 41-46 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The U.S. Patents used in the art rejections below have been provided as text documents which correspond to the U.S. Patents. The relevant portions of the text documents are cited according to page and line numbers in the art rejections below. For the convenience of Applicant, the cited sections are highlighted in the *text documents*. Consistent with Office procedure, the U.S. Patents corresponding to the *text documents* are also included with this action.

9. Claim Rejections - 35 U.S.C. § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 1-17, 24-40 and 47-50 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ferguson et al. (U.S. Patent 5,504,894) in view of Vaitzblit et al. (U.S. Patent 5,528,513).

As to claim 1, Ferguson teaches a method of workload management in a data processing system (invention to provide a workload manager, p3 1-7) comprising:

classifying a process (submitted transaction, p4 36-57) into a class of a plurality of predefined classes (plurality of separate transaction classes, p3 1-40)

performing workload management with respect to classes in other tiers based on priorities of the tiers (workload balancing by providing a scheduling priority for each class of transactions, p 3 17-20).

Ferguson does not explicitly disclose the additional limitations detailed below.

Vaitzblit teaches each of the plurality of predefined classes (three classes of schedulable tasks, p3 45-49) having corresponding system resource shares and a tier (scheduler supports multiple classes ... in a hierarchical manner, abstract) and

performing workload management with respect to other classes within a same tier as the class into which the process is classified (scheduling is hierarchical in that a class of activity is scheduled, p4 40-55) based on the corresponding system resource shares of the class and of the other classes (GP ready queue 108, which is served in a round-robin fashion, p5 26-40) such that at least some of the processes within a same tier concurrently share system resources during execution of the at least some processes (individual tasks within that class are scheduled [in a time sharing allocation of CPU resource], p4 40-55).

It would have been obvious to combine Vaitzblit's teachings with Ferguson because the hierarchical priority scheduling system would facilitate the multi-class servicing of goals in the workload manager.

As to claim 2, Vaitzblit (p5 40-49) teaches the guarantee of bandwidth which corresponds to allocating resources to a process relative to other processes .

As to claim 3, Vaitzblit (abstract) teaches the classes (isochronous, real time, and general purpose) tiers provide a measure of importance of a class relative to other classes.

As to claim 4, Ferguson (p3 28-39) teaches the process is classified into a class based on one or more classification rules (grouping of transactions based on a variety of characteristics).

As to claim 5, Vaitzblit (p4 40 – p5 41) teaches storing the task/process in its respective queue based on the classification of the process into the class.

As to claim 6, Vaitzblit (pp6-9) teaches "the admission control policy" with a scheduler for defining resource allocations/limits on the identified classes.

As to claim 7, Vaitzblit (abstract) teaches the "hierarchical" organization of resource tiers.

As to claim 8, Ferguson (p3 39-47) teaches the performing workload management with respect to other classes within a same tier comprises determining a percentage goal for the process as a function of a number of system resource shares associated with the class in which the process is classified divided by a total number of shares allocated to active classes in the same tier as the class in which the process is classified.

As to claim 9, Ferguson (pp2-3) teaches the process has an associated priority component used, along with the system resource shares of the class, to calculate a resource allocation priority.

As to claims 10-11, see the discussion of claim 8 supra.

As to claim 12, Ferguson (p3 40-47) teaches the "workload manager computes a current average class response time for each transaction class and derives a current class performance index for each of
these classes with respect to its class response time goal. In the preferred embodiment, the current class performance index for a class is the current average class response time for that class divided by the class response time goal for that class. The current average class response times for the transaction classes and the current class performance index for each class is updated as more recent transactions are completed."

As to claim 13, Ferguson teaches "system state information" and more specifically, "resource usage statistics" in connection with each class, p6 14-28.

As to claim 14, cf Vaitzblit's admission control for scheduling/rejecting certain processing requests.

As to claims 15-16, Ferguson (p3 17-20) teaches "achieve such workload balancing by providing a scheduling priority for each class of transactions and by dynamically adjusting these scheduling priorities in accordance with the response time dissatisfaction performance index."

As to claim 17 see the claim 6 discussion.

As to claims 24-40, note the rejections of claims 1-17 above. Claims 24-40 are the same as claims 1-17, except claims 24-40 are apparatus claims and claims 1-17 are method claims.

As to claims 47-50, note the rejection of claims 1-4 above. Claims 47-50 are the same as claims 1-4, except claims 47-50 are apparatus claims and claims 1-4 are method claims.

11. The prior art of record and not relied upon is considered pertinent to the applicant's disclosure. Each reference disclosed below is relevant to one or more of the Applicant's claimed invention.
U.S. Patent No. 6,560,649 to Mullen et al. which teaches the hierarchical classification of tasks into work-groups;
U.S. Patent No. 6,418,459 to Gulick which teaches the multi-tier ordering of processes with respect to resource requirements;
U.S. Patent No. 6,385,639 to Togawa which teaches the intergroup resource utilization;
U.S. Patent No. 6,341,303 to Rhee et al. which teaches the administration of resources to classes of tasks for achieving performance plans;
U.S. Patent No. 6,108,683 to Kamada et al. which teaches the prioritized allocation of resources to job-groups;
U.S. Patent No. 5,991,793 to Mukaida et al. which teaches the managing of process units for governing prioritized program class execution;
U.S. Patent No. 5,748,958 to Badovinatz et al. which teaches the controlling of process groups for workload goals;
U.S. Patent No. 5,682,530 to Shimamura et al. which teaches the hierarchical arrangement of tasks in resource groups;

U.S. Patent No. 5,640,595 to Baugher et al. which teaches the resource reservation for job classes; and,
U.S. Patent No. 5,603,029 to Aman et al. which teaches the dynamic adjustment of resource allocations to work groups.

12. Response to Applicant's Arguments:

Applicant's remarks accompanying Amendment A have been considered but are deemed moot in view of the new grounds of rejection necessitated by Applicant's amendments.

The Office acknowledges Applicant's inclusion of an electronic copy of the amendment on a 3½inch floppy disk, and the Office would like to thank Applicant for submitting the amendment in electronic form to expedite its processing.

13. THIS ACTION IS MADE FINAL.

A SHORTENED STATUTORY PERIOD FOR RESPONSE TO THIS FINAL ACTION IS SET TO EXPIRE THREE MONTHS FROM THE DATE OF THIS ACTION. IN THE EVENT A FIRST RESPONSE IS FILED WITHIN TWO MONTHS OF THE MAILING DATE OF THIS FINAL ACTION AND THE ADVISORY ACTION IS NOT MAILED UNTIL AFTER THE END OF THE THREE-MONTH SHORTENED STATUTORY PERIOD, THEN THE SHORTENED STATUTORY PERIOD WILL EXPIRE ON THE DATE THE ADVISORY ACTION IS MAILED, AND ANY EXTENSION FEE PURSUANT TO 37 C.F.R. □ 1.136(a) WILL BE CALCULATED FROM THE MAILING DATE OF THE ADVISORY ACTION. IN NO EVENT WILL THE STATUTORY PERIOD FOR RESPONSE EXPIRE LATER THAN SIX MONTHS FROM THE DATE OF THIS FINAL ACTION.

14. Request for copy of Applicant's response on floppy disk:
Please help expedite the prosecution of this application by including, along with your amendment response in paper form, an electronic file copy in WordPerfect, Microsoft Word, or in ASCII text format on a 3½ inch IBM format floppy disk. Please include all pending claims along with your responsive remarks. Only the paper copy will be entered -- your floppy disk file will be considered a duplicate copy. Signatures are not required on the disk copy. The floppy disk copy is not mandatory; however, it will help expedite the processing of your application. Your cooperation is appreciated.

15. Contact Information:

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system.

Status information for published applications may be obtained from either Private-PAIR or Public-PAIR.

Status information for unpublished applications is available through Private-PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov.

Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

☐ All responses sent by U.S. Mail should be mailed to:

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

☐ Hand-delivered responses should be brought to Crystal Park Two, 2021 Crystal Drive, Arlington, VA., Sixth Floor (Receptionist). All hand-delivered responses will be handled and entered by the docketing personnel. Please do not hand deliver responses directly to the Examiner.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

All OFFICIAL faxes will be handled and entered by the docketing personnel. The date of entry will correspond to the actual FAX reception date unless that date is a Saturday, Sunday, or a Federal Holiday within the District of Columbia, in which case the official date of receipt will be the next business day. The application file will be promptly forwarded to the Examiner unless the application file must be sent to another area of the Office, e.g., Finance Division for fee charging, etc.

☐ Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist at **(703) 305-9600.**

☐ Any inquiry concerning this communication or earlier communications from the examiner should be directed to George Opie at (703) 308-9120 or via e-mail at *George.Opie@uspto.gov*. Internet e-mail should not be used where sensitive data will be exchanged or where there exists a possibility that sensitive data could be identified unless there is an express waiver of the confidentiality requirements under 35 U.S.C. 122 by the Applicant. Sensitive data includes confidential information related to patent applications.

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